980.1 TRAFFIC PAINT

A. Traffic Paint: The finished paint shall be smooth and homogeneous, free of coarse particles, skins or any other foreign materials that are detrimental to its use or appearance.

The vehicle shall be composed of a 100% acrylic polymer such as Rohm and Haas Rhophlex Fastrack 3427, Dow DT-250, or an approved equal.

1. Quantitative Requirements: The finished paint shall meet the following quantitative requirements:

	WHITE	YELLOW
Lead, parts per million max. ASTM D 3335 or X-ray fluorescence	100	100
Pigment, percent by weight	60.0 - 62.0	58.5 - 60.5
Pigment, percent by weight; when tested in accordance with ASTM D 3723 (See Note 1)	60.0 - 62.0	56.1 - 58.1

Note 1: The residual extracted pigment upon analysis shall conform to the following quantitative compositional requirements when tested in accordance with ASTM D 1394 or ASTM D 4764.

Titanium Dioxide ASTM D 476 Type II Rutile 92% min. $Ti0_2$ tested in accordance with ASTM D 1394 or ASTM D 4764	1.00 lb/gal min.	0.20 lb/gal min.
Total Solids, percent by weight; min. when tested in accordance with ASTM D 3723	77.0	76.1
Non-volatile Vehicle, percent by weight vehicle; min. when tested in accordance with FTMS 141c (Method 4051.1)	42.5	42.5
Consistency. Krebs-Stormer Shearing rate 200 r.p.m. Grams	190 to 300	190 to 300
Equivalent K.U. when tested in accordance with ASTM D 562 (See Note 2)	80 to 95	80 to 95

Note 2: The consistency of the paint shall be within the stated specification when determined a minimum 48 hours after packaging the material.

Weight per Gallon, pounds minimum when tested in accordance with ASTM D 1475 (See Note 3)	13.90	13.35

Note 3: In addition to compliance with the minimum, the weight per gallon shall not vary more than ± 0.3 lbs / gal. between batches.

Fineness of Dispersion Hegman Scale, min. when tested in accordance with ASTM D 1210	2 min. "B" Cleanliness	2 min "B" Cleanliness
Drying Time, No Pick-Up, Minutes, max. when tested in accordance with ASTM D711, except the wet film thickness shall be 12.5 ± 0.5 mils. The applied film shall be immediately placed in a laboratory drying chamber maintaining the relative humidity of 65 ± 3%, the temperature 73.5 ± 3.5°F (23 ± 2°C), and air flow less than one foot (1') per minute.	12max.	12max.
Drying Time, Dry-through, Minutes max. when tested in accordance with ASTM 1640, except the wet film thickness shall be 12.5 ± 0.5 mils. The applied film shall be immediately placed in a laboratory drying chamber maintaining the relative humidity at 90 ± 3%, and the temperature 23 ± 2°C. The pressure exerted will be the minimum needed to maintain contact between the thumb and film. A reference-control paint will be run in conjunction with the candidate paint. Rohm and Haas formulation will be referenced-control paint.	120max.	120max.

Note 4: If either the candidate or reference-control paint exceeds the 120 minute maximum, then the candidate paint shall not exceed the dry time of the reference-control paint by more than 15 minutes.

Field Drying Time, Track-Free, minutes max. When applied under the following conditions, the line shall show no visual tracking when viewed from 50 feet after driving a passenger vehicle over the line at a speed of 25-35 mph: Fifteen mils wet film thickness Six lbs. of glass beads per gal. of paint Paint temperature at nozzle between 70 to 120°F Pavement dry, pavement temperature 50 to 120°F Relative humidity of 85% maximum	2	2
Directional Reflectance, minimum. when applied at a wet film thickness of 15 mils and when tested in accordance with ASTM E 1347 (Illuminate C 2°)	85	50
pH, minimum. when tested in accordance with ASTM E70	9.80	9.80

Dry Opacity, Contrast ratio, min. 0.955 0.880
when applied at a wet film thickness of 6 to 7 mils and when tested in accordance with FTMS 141c (Method 4121 Illuminate C 2°)

Volatile Organic Content (VOC), max. 115 g/liter 115 g/liter
in accordance with ASTM D 3960

Flash Point, closed cup, min. 115°F 115°F

Color: The paint shall meet the color specification limits and luminance factors listed in Tables 1 & 2 when tested in accordance with ASTM E1347 or ASTM E1349. The paint shall not discolor in sunlight and shall maintain the colors and luminance factors throughout the life of the paint. No Bayferrox 3950, iron oxides or other color enhancers will be permitted to achieve the color chromaticity coordinates.

Table 1*

Color	Chromaticity Coordinates (corner points)								Min. Luminance Factor (Y %)
	X	Y	X	Y	X	Y	X	Y	
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375	35
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400	25

* Daytime Color Specification Limits and Luminance Factors for Pavement Markings Material with CIE 2° Standard Observer and 45/0 (0/45) Geometry and CIE Standard Illuminant D65

Table 2**

Color	Chromaticity Coordinates (corner points)							
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
White	0.480	0.410	0.430	0.380	0.405	0.405	0.455	0.435
Yellow	0.575	0.425	0.508	0.415	0.473	0.453	0.510	0.490

** Nighttime Color Specification Limits for Pavement Marking Retroreflective Material With CIE 2° Standard Observer, Observation Angle = 1.05°, Entrance Angle + 88.76° and CIE Standard Illuminant A.

2. Qualitative Requirements: The finished paint shall meet the following qualitative requirements:

Condition in Container - Storage Stability. Within a period of twelve (12) months from the time of delivery and when examined in accordance with FTMS 141C (Method 3011.2), the paint shall not show excessive settling in a freshly-opened full can and shall be easily redispersed with a paddle to a smooth homogeneous state. The paint shall show no undesirable characteristics to include curdling, livering, caking, gelling or thixotropic properties, lumps, skins or color separation. The consistency shall not change more than 5 Kreb Units from that of the original sample, the degree of settling shall have a rating of six (6) or better, and the drying time shall be as specified.

Skinning. The paint shall not skin within 48 hours in a three-quarter filled, tightly closed container when examined in accordance with FTS 141C (Method 3021.1).

Flexibility and Adhesion. The paint shall show no cracking, flaking or loss of adhesion when tested as specified. Apply a wet film thickness of 0.005 inches with a film applicator to a 3 x 5 inch tin panel weighing 0.39 to 0.51 lbs. per sq. foot, previously cleaned with benzene and lightly buffed with steel wool. Dry the paint film at 70 to 80°F in a horizontal position for 18 hours, then bake in an oven at 122 ± 4°F (47.8 to 52.2°C) for two hours, and cool to room temperature for at least ½ hour. Bend over a ½ inch diameter rod and examine, without magnification, in accordance with FMTS 141C (Method 6221).

Water Resistance. The paint shall show no softening, blistering, loss of adhesion or other evidence of deterioration, other than a slight loss in gloss when tested as specified. Apply a wet film thickness of 0.015 inches with a film applicator to a clean glass plate. Dry the paint film at 70 to 80°F in a horizontal position for 72 hours. Immerse one-half of the painted plate in distilled water in a vertical position at room temperature (70 to 80°F) for 18 hours in accordance with FTS 141C (Method 6011). Remove the painted plate from the immersion liquid, allow to air dry for two hours and then examine.

Dilution Stability. The paint shall be capable of dilution with water with no separation, curdling or precipitation observed when examined in accordance with FTS 141C (Method 4203.1), such that the wet paint can be readily cleanable with only water.

Spraying Properties. The paint as received shall have satisfactory spraying and hiding properties when applied by either airless or air-assisted type traffic stripers to glass or metal plates at a wet film thickness of 0.015 inches.

Bleeding. The paint shall have a minimum bleeding ratio of 0.97 when tested in accordance with Federal Specification TT-P-1952 B. The asphalt saturated felt shall conform to ASTM D 226 (Type I).

Freeze-Thaw Stability. The paint shall show no coagulation or change in consistency greater than 5 Kreb Units when tested in accordance with TT-P-1952 B.

Heat Stability. The paint shall show no coagulation, discoloration or change in consistency greater than 5 Kreb Units when tested in accordance with TT-P-1952 B. The degree of settling shall have a rating of six (6) or better when evaluated in accordance with ASTM D 869.

Abrasion Resistance. No less than 190 liters of sand shall be required for removal of the paint film when tested in accordance with TT-P-1952 B.

The manufacturer shall submit a "Certificate of Compliance" for each batch of paint produced for use under this specification. The certification shall contain the manufacturer code number and batch number along with the test results of each batch for weight per gallon, viscosity, drying time, percent pigment, percent vehicle, and fineness of grind.